Amendments to the Claims:

1. (currently amended) An apparatus used in planarizing a ~~front surface of a~~ wafer having a front surface, a leading edge, and a trailing edge, the apparatus comprising:

~~a) an interferometer monitoring a front surface of a wafer;~~

a polishing pad having a polishing surface;

a platen adapted to support the polishing pad;

a motion generator operably coupled to rotate the platen;

an interferometer, comprising a light source positioned to sweep a light signal entirely across the wafer front surface from the wafer leading edge to the wafer trailing edge due to rotation of the platen, and a detector positioned to capture the light signal after reflecting off the wafer front surface;

~~b)~~a multizone carrier adapted for pressing the front surface of the wafer against the polishing surface, said carrier comprising a plurality of concentric, independently pressurizable plenums, each of said plurality of plenums capable of containing a different, uniform pressure; ~~and~~

~~c)~~a control system in communication with the interferometer and the multizone carrier for varying the pressure in each of said plurality of plenums.

2. (currently amended) The apparatus of claim 1, wherein the interferometer further comprises ~~a light source positioned to direct a light signal towards a front surface of a wafer and~~ a detector positioned to capture the light signal ~~towards a~~ incident on the front surface of a wafer ~~and a detector positioned to capture the light signal after reflecting off the front surface of the wafer~~.

3 to 10. (canceled).

11. (currently amended) An apparatus used in planarizing a ~~front surface of a~~ wafer having a front surface, a leading edge, and a trailing edge, the apparatus comprising:

~~a)~~ a platen for supporting a polishing surface;

~~b)~~ a motion generator operably coupled to rotate the platen;

~~c)~~ a light source positioned in the platen and operable to ~~direct~~ sweep a light signal ~~toward a~~ entirely across the wafer front surface ~~of a wafer~~ from the wafer leading edge to the wafer trailing edge due to rotation of the platen;

~~d)~~ a detector position in the platen to capture the light signal after reflecting off the front surface of the wafer;

~~e)~~ a multizone carrier having a plurality of concentric, independently controllable pressure plenums, wherein the carrier is adapted for pressing the front surface of the wafer against the polishing surface; and

~~f)~~ a control system in communication with the light source, the detector and the multizone carrier for adjusting the pressure in each of said plurality of concentric, independently controllable pressure plenums.

12. (currently amended) The apparatus of claim 11, wherein the light source comprises a laser and the detector comprises an interferometer.

13. (canceled).

14. (currently amended) An apparatus used in planarizing a ~~front surface of a~~ wafer having a front surface, a leading edge, and a trailing edge, the apparatus comprising:

a polishing pad having a polishing surface;

a platen adapted to support the polishing pad;

a motion generator operably coupled to rotate the platen;

~~a) the~~ a temperature probe positioned to sweep entirely across the wafer front surface from the wafer leading edge to the wafer trailing edge due to rotation of the platen, and configured for monitoring the front surface of a wafer;

~~b)~~ a multizone carrier having a plurality of concentric, independently controllable pressure plenums, wherein the carrier is adapted for pressing the front surface of the wafer against the polishing surface; and

~~c)~~ a control system in communication with the temperature probe and the multizone carrier for adjusting the pressure in each of the independently controllable pressure plenums.

Claim 15 (currently amended) An apparatus used in planarizing a ~~front surface of a~~ wafer having a front surface, a leading edge, and a trailing edge, the apparatus comprising:

a polishing pad having a polishing surface;

a platen adapted to support the polishing pad;

a motion generator operably coupled to rotate the platen;

~~a)~~ an eddy current probe positioned to sweep entirely across the wafer front surface from the wafer leading edge to the wafer trailing edge due to rotation of the platen, and configured for monitoring a front surface of wafer;

~~b)~~ a multizone carrier having a plurality of concentric, independently controllable pressure plenums, wherein the carrier is adapted for pressing the front surface of the wafer against a polishing surface; and

~~c)~~ a control system in communication with the eddy current probe and the multizone carrier for adjusting the pressure in each of said independently controllable pressure plenums.

16-20. (canceled).

21. (currently amended) A method for planarizing a front surface of a wafer having a front surface, a leading edge, and a trailing edge, the method comprising the steps of:

a) continuously pressing a front surface of a wafer mounted in a multizone carrier against a working surface during a planarization process, the multizone carrier comprising a plurality of concentric, independently pressurizable plenums;

b) continuously rotating the working surface and thereby generating relative motion between the front surface of the wafer and the working surface during the planarization process;

c) ~~transmitting~~ sweeping a light signal ~~to~~ entirely across the front surface of the wafer from the wafer leading edge to the wafer trailing edge due to rotation of the working surface;

d) receiving an interference signal from the front surface of the wafer;

e) calculating intensity measurements from the interference signals;

f) correlating intensity measurements with radial positions on the front surface of the wafer;

g) analyzing the intensity measurements and the correlated ~~correlating~~ radial positions;

h) adjusting the pressure in at least one of said plurality of plenums based on the analysis.

22. (canceled).

23. (currently amended) The method of claim 21, further comprising the steps of:

~~a)~~ repeating steps c) through h) until an endpoint condition has been detected.

24. (canceled).

25. (previously presented) A method for planarizing a front surface of a wafer on a chemical mechanical polishing tool with a rotating working surface and a multizone carrier for holding the wafer and pressing it against the working surface, comprising the steps of:

a) polishing a first wafer by continuously pressing a front surface of the wafer against the rotating working surface using a first set of carrier zone pressures;

b) transmitting a plurality of sequential light signals to the front surface of the first wafer;

c) receiving a plurality of reflected light signals from the front surface of the first wafer corresponding to the transmitted light signals;

d) correlating the reflected light signals with radial positions on the front surface of the first wafer;

e) determining a planarization condition of the front surface of the first wafer based on the reflected light signals and the radial positions thereof;

f) adjusting the multizone carrier to a second set of carrier zone pressures based on the planarization condition of the first wafer;

g) polishing a second wafer using the second set of carrier zone pressures;

h) identifying a radial region of the first wafer that was overpolished relative to other regions of the wafer; and

i) adjusting the carrier zone pressures such that the lowest carrier pressure is substantially adjacent to the overpolished region of the first wafer.

26. (canceled).

27. (original) The method of claim 25 wherein the light signals in the step of transmitting a plurality of light signals are laser light signal.

28. (original) The method of claim 27 wherein the interferometer is used in step (c) for receiving the reflected light signals.

29. (new) The method of claim 21, wherein the step (f) of correlating intensity measurements with radial positions on the front surface of the wafer comprises:

correlating intensity measurements with a mid-line position on the wafer by averaging times T1 and T2, wherein T1 is a time at which a first intensity measurement spike is produced corresponding to the wafer leading edge, and T2 is a time at which a second intensity measurement spike is produced corresponding to the wafer trailing edge.

30. (new) The method of claim 29, wherein the step (f) of correlating intensity measurements with radial positions on the front surface of the wafer further comprises:

dividing the intensity measurements into a plurality of sections, each section corresponding to a time range taking place when the light signal is swept entirely across the wafer front surface;

calculating a time difference between the times corresponding to the mid-line position on the wafer and to each section; and

correlating each section with a radial position on the wafer using the calculated time differences and the working surface rotational speed.

31. (new) The method of claim 30, wherein the step (f) of correlating intensity measurements with radial positions on the front surface of the wafer further comprises:

averaging intensity measurements for a section of data from a plurality of light signal sweeps across the wafer front surface.

32. (new) The apparatus of claim 1, wherein the control system is configured to correlate intensity measurements from the captured light signal with radial positions on the wafer front surface.

33. (new) The apparatus of claim 32, wherein the control system is further configured to correlate intensity measurements with a mid-line position on the wafer by averaging times T1 and T2, wherein T1 is a time at which a first intensity measurement spike is produced corresponding to the wafer leading edge, and T2 is a time at which a second intensity measurement spike is produced corresponding to the wafer trailing edge.

34. (new) The apparatus of claim 33, wherein the control system is further configured to:

divide the intensity measurements into a plurality of sections, each section corresponding to a time range taking place when the light signal is swept entirely across the wafer front surface;

calculate a time difference between the times corresponding to the mid-line position on the wafer and to each section; and

correlate each section with a radial position on the wafer using the calculated time differences and the working surface rotational speed.

35. (new) The apparatus of claim 34, wherein the control system is further configured to average intensity measurements for a section of data from a plurality of light signal sweeps across the wafer front surface.

36. (new) The apparatus of claim 11, wherein the control system is configured to correlate intensity measurements from the captured light signal with radial positions on the wafer front surface.

37. (new) The apparatus of claim 36, wherein the control system is further configured to correlate intensity measurements with a mid-line position on the wafer by averaging times T1 and T2, wherein T1 is a time at which a first intensity measurement spike is produced corresponding to the wafer leading edge, and T2 is a time at which a second intensity measurement spike is produced corresponding to the wafer trailing edge.

38. (new) The apparatus of claim 37, wherein the control system is further configured to:

divide the intensity measurements into a plurality of sections, each section corresponding to a time range taking place when the light signal is swept entirely across the wafer front surface;

calculate a time difference between the times corresponding to the mid-line position on the wafer and to each section; and

correlate each section with a radial position on the wafer using the calculated time differences and the working surface rotational speed.

39. (new) The apparatus of claim 38, wherein the control system is further configured to average intensity measurements for a section of data from a plurality of light signal sweeps across the wafer front surface.